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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/848,256	05/04/2001	Kazuyuki Misumi	401188	6322

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EXAMINER

THAI, LUAN C

ART UNIT	PAPER NUMBER
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2827

DATE MAILED: 10/04/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/848,256

Applicant(s)

MISUMI ET AL.

Examiner

Luan Thai

Art Unit

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 10, 11 and 17-24 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 10, 11 and 17-24 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 13. 6) ☐ Other: _____

Request for Continued Examination

A request for continued examination (RCE) under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 9/5/02 has been entered. An action on the RCE follows.

Claims **10-11** and **17-24** are pending in this application.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims **10** and **11** are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The specification, as originally filed, does not disclose that a die pad separate from and not continuously connected to the lead frame, as recited in claims 10-11. In fact, applicant's specification recites that the tip end of the internal leads 2h-2i contact with the die pad 3 (page 15, lines 25-26, page 16, lines 9-10 and 19-20).

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims **10-11, 17-21, and 23** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim **10**, the expression "*a die pad separate from and not continuously connected to the lead frame* and on which the semiconductor chip is mounted, wherein the lead frame includes protrusions extending substantially perpendicular to and *contacting the die pad*" is confused and not understood as how a die pad, which is separated from and not continuously connected to the lead frame, can be contacted by the protrusions extended from the lead frame. Similarly, in claim **11**, how a die pad, which is separated from and not continuously connected to the lead frame, can contact the internal leads of the lead frame.

In claim **21**, lines 7-11, the expression "each of the tape member having ... a second surface, not fixed to the surface of the semiconductor chip, only a portion of the second surface of each of the tape member contacting the surface of the semiconductor chip" is unclear as how the second surface of the tape member that is not fixed to the surface of the chip can contact the surface of the chip.

Claims **17-19, 20 and 23** are rejected since each includes the limitations of independent claims **10 and 21**.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

6. Claims **10-11, 17, and 19**, insofar as in compliance with 35 USC 112, are rejected under 35 U.S.C. 102(b) as being anticipated by Tomita et al. (5,535,509 of record).

The figures and reference numbers referred to in this office action are used merely to indicate an example of a specific teaching and are not to be taken as limiting.

Regarding claims 10, 17, and 19, Tomita et al. disclose (see specifically figures 1-2-3-8-9A-9B-11-12A-12B) a sealed semiconductor device (figures 1A-1B and 11) comprising: a semiconductor chip 2; a lead frame 81 including internal leads 3 extending across part of and spaced from a surface of the chip; a die pad 82 separate from and not continuously connected to the lead frame 81 and on which chip 2 is mounted, wherein the lead frame 81 includes protrusions 17 (or protrusions 11 in figure 8, protrusions 15 in figures 9A-9B) extending substantially perpendicular to and contacting the die pad 82, but not contact the semiconductor chip 2. Tomita et al. further disclose the die pad 110 being

substantially rectangular and the protrusions extending proximate a pair of shorter sides of the die pad 82.

Regarding claim 11, Tomita et al. further disclose (see figures 10A-10D) the die pad 82 including protrusions 16 extending toward and contacting some of the internal leads of lead frame 81.

7. Claim 22 is rejected under 35 U.S.C. 102(b) as being anticipated by Ichinose (6,211,573).

The figures and reference numbers referred to in this office action are used merely to indicate an example of a specific teaching and are not to be taken as limiting.

Regarding claim 22, Ichinose discloses (see specifically figures 17, 21-22-24, 26, and 28) a lead frame and tape for a sealed semiconductor device having a rectangular semiconductor chip sealed within an encapsulating resin 6, the lead frame and tape comprising: internal leads 1 extending toward and electrically connected with wires 5 to respective pads located approximately along a central axis of the semiconductor chip; a tape including four tape members 3B, each tape member having a first surface to which some of the internal leads 1 are fixed, each of the tape members being arranged at a respective corner of the semiconductor chip (see figure 22) so that a portion of a second surface of each of the tape members contacts a surface of the semiconductor chip when the semiconductor chip is sealed within the encapsulating resin 6 (see figures 24-25).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 20-21 and 23-24, insofar as in compliance with 35 USC 112, are rejected under 35 U.S.C. 103(a) as being unpatentable over Ichinose (6,211,573) in view of Lee (5,358,906 of record).

The figures and reference numbers referred to in this office action are used merely to indicate an example of a specific teaching and are not to be taken as limiting.

Regarding claims 20-21 and 23-24, Ichinose discloses all the limitations of the claimed invention as detailed above except for a portion of each tape members protruded beyond at least one edge of the surface of the semiconductor chip and a die pad for the semiconductor chip mounted thereon.

A tape member that bonds internal leads to a surface of a semiconductor chip and protrudes beyond an edge of the surface of the semiconductor chip and a die pad for the semiconductor chip mounted thereon, however, is conventional in the art, as taught by Lee (e.g., tape member 33 and die pad 34a in figure 3, tape member 53 and die pad 54a in figures 5 and 9). It would have been obvious to one of ordinary skill in the art at the time the invention was made to form the tape members extending beyond an edge of the surface of the semiconductor

chip, since such tape member structure is conventional in the art, as taught by Lee and this performance is held to be within a general skill of a worker in the art.

10. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tomita et al. (5,535,509 of record) in view of Aoki (5,834,691 of record).

The figures and reference numbers referred to in this office action are used merely to indicate an example of a specific teaching and are not to be taken as limiting.

Regarding claim 18, Tomita et al. disclose(s) all the limitations of the claimed invention as detailed above except for the protrusions extending proximate a pair of longer sides of the rectangular die pad. Note that Tomita et al. do disclose the protrusions extending proximate pair of shorter sides of the rectangular die pad.

Aoki while related to a similar lead-on-chip with die pad structure design teaches (see specifically figures 25c-25d) the protrusions (S) extending proximate a pair of either shorter sides or longer sides of the rectangular die pad (D). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the die pad of Tomita et al.'s lead frame by forming the protrusions extending proximate a pair of longer sides of the rectangular die pad instead of extending proximate a pair of shorter sides of the rectangular die pad, since such structure is conventional in the art, as taught by Aoki, and the modification is held to be within a general skill of a worker in the art.

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11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luan Thai whose telephone number is (703) 308-1211.

The examiner can normally be reached on 7:00 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Talbott can be reached on (703) 305-9883. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Luan Thai
September 19, 2002



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